MODIS SCIENCE TEAM MEMBER
Quarterly Report (Jan - April 1993)

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Contract #: NAS5 31365

a) Task Objectives

The objective of this phase of the project was: to continue the research program developing the 'at-launch' algorithms for MODIS atmospheric correction, vegetation indices, fire detection and land cover; to build the infrastructure to permit the research to be undertaken, by purchasing the necessary computer hardware and to establish the necessary collaborative research projects.

The collaborative research projects are intended to expand the scope of the team members activities and involve a larger community in the MODIS research. In addition preliminary results of the research were presented at key scientific meetings. The project was also represented at the MODIS Team meeting. Results of the project are in the process of being written up and submitted for publication.

b). Tasks Accomplished (Data analysis and interpretation).

Specifically the project has addressed the following topics over the last four months:

MODIS Atmospheric Correction

- 6S code: Development of a procedure to integrate BRDF signatures has been completed. Several BRDF models have been implemented (Pinty and Verstraete, Hapke, Roujean et al, Walthall et al) and testing is underway.

- Stratospheric Aerosol: analysis continues to evaluate the effect of stratospheric aerosols on AVHRR data. Collection of AVHRR data (visible and near- infrared) is underway to compute the AOT in both channels and improve the existing stratospheric aerosol model.

- Aerosol Retrieval: Brazil aerosol measurements from the Holben Sunphotometer Network have been used to test DDV aerosol retrieval method using AVHRR GAC data. AVHRR LAC scenes for GSFC have been selected to test the aerosol retrieval method (DDV and Contrast Reduction) using measurements from the prototype sunphotometer instrument.
Theoretical work in the thermal infrared has been performed in order to validate the AVHRR-channel 3 albedo computation used in the DDV algorithm. This development will enable also to validate the water vapor retrieval important for AVHRR-channel 2 data analysis.

-Sun photometer Aerosol Validation Activity: the operational version of the instrument that will be operating in Brazil and during Pre-Scar and BOREAS campaigns is almost complete. During Pre-Scar two Sunphotometers will be operating in Long Term Ecological Reserves Sites (Harvard Forest and Virginia Coast). This effort provides an important contribution to the MODIS atmospheric correction validation plans.

- AVHRR Calibration: Efforts on-going for the calibration of the pm AVHRR (on board NOAA 7 and 11)

- Pre Scar Field Campaign Preparation.
MAS data: The MAS Archive was investigated for suitable land acquisitions. The goal is to select a series of scenes to be ordered from MSDST on 8mm cassette for further analysis. Software developed to analyze the Pre-Scar Experiment data will be tested on this first dataset. AVHRR and TM scene from sites where MAS and AVIRIS will be flying during Pre Scar has been ordered for analysis. A meeting was held to coordinate the ground based PreScar experiment.

MODIS Land Cover
-There was no direct activity this quarter with respect to Land Cover although the collaboration with the University of Maryland continues.

MODIS FIRE DETECTION
- IGBP-DIS Fire Algorithm Workshop (GSFC - February '93) A workshop was held to review the current status of remote sensing of fires, to develop a community consensus algorithm for fire detection using the AVHRR and to present the plans for the MODIS fire detection. c) Data / Analysis / Interpretation

AVHRR GAC data (Gimms), LAC data (EDC) and HRPT data (IGBP Global data set) were analyzed during the reporting period.

Sunphotometer data continued to be collected at GSFC.

Landsat data were obtained through the EDC MODIS test site initiative. Landsat TM data were acquired through the EOSAT NASA data grant.

MODIS / LTER Meeting (GSFC- March 25/26 '93) A workshop was held to strengthen the MODIS /LTER collaboration. MODLAND members attended and there was much discussion concerning the MODIS Test Site Concept and possible areas for near term collaboration.

Operationalisation of Remote Sensing (Holland - April '93) A presentation was made at the above meeting on the need for operational remote sensing for global change. Material on MODIS was included in the presentation.

Land Processes DAAC Science Advisory Meeting MODIS was represented at the DAAC bi-annual review.

d) Anticipated future actions

Research:
Produce the ATBD's
Continued AVHRR/ASAS Atmospheric Correction Study Continued AVHRR Fire Algorithm Study
Continued AVHRR Land Cover Classification Study Continued AVHRR Vegetation Index Processing Improvements Continued MODIS Airborne Simulator Analyses

Upcoming Meetings:

SAFARI Fire Results Meeting (Stellenbosch - May '93) IGBP Regional Meeting on Fire in the Environment, Zimbabwe (June '93)

Hardware Purchase

No new equipment purchased

e) Problems/Corrective Actions

Nothing to report

f) New Papers
IGBP Fire Algorithm Workshop Report (In Progress)